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# National Systematics Laboratory Report for Calendar Year 1990

Washington, DC

August 1991

**U.S. DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
National Marine Fisheries Service

# ANNUAL REPORT
# National Systematics Laboratory
# Calendar Year 1990

Washington, DC
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**U.S. DEPARTMENT OF COMMERCE**
**Robert A. Mosbacher, Secretary**

**National Oceanic and Atmospheric Administration**
John A. Knauss, Under Secretary for Oceans and Atmosphere

National Marine Fisheries Service
William W. Fox, Jr., Assistant Administrator for Fisheries

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# 1990 HIGHLIGHTS

* Paper separating two species of sand lances (Ammodytes) in the western North Atlantic was published in the Fishery Bulletin

* A paper discussing gray literature in fishery science was published in a recent symposium volume on writing for fishery journals

* Extensive progress was made on the systematics of tonguefishes (Symphurus)- four papers were published, two accepted, and one more submitted

* Three new species of fishes were discovered on Walters Shoals, Madagascar Ridge

* Study on digestive gland histology revealed nutritional state in paralarval squids may be used to assess mortality rates and survival in paralarval squids

* An ovigerous female of the western Pacific crab, Hemigrapsus sanguineus, was found near Cape May, New Jersey

* Three new species of squat lobsters (Munidopsis) from hydrothermal vent and other deep-sea habitats in the Pacific Ocean were described

* A new genus (Pomatogebia) of tropical western Atlantic mud shrimps was described

* A new species of xanthid crab, Panopeus margentus, from off northeastern Argentina was described

*Marine biodiversity initiative was drafted

* Systematics Laboratory zoologists participated in Smithsonian expedition to collect fishes from coastal and freshwaters of Tobago

## MISSION

The National Systematics Laboratory conducts taxonomic research on marine organisms of economic and ecological value to the United States. In addition to providing taxonomic information on species that are commercially important, scientific studies conducted by Systematics Laboratory personnel comprise significant contributions to the study of marine biodiversity by describing and naming new species as well as revising existing names and descriptions based on new information. Because many important species are widespread or migratory, our research is world-wide.

Accurate taxonomic information is the critical first step in recognizing individual species. Additionally, this information provides an understanding of the diversity of marine communities and is the necessary basis for proper management of our nation's living marine resources. Without a clear understanding of what individual species look like, where they are found, and what their names are, we cannot collect accurate statistics, develop reasonable national fishing and conservation regulations, set catch limits, or begin to understand the complexity and diversity of marine communities.

The Systematics Laboratory is involved actively in studying the taxonomy and biodiversity of fishes, crustaceans, and squids. We have a permanent staff of four scientists, a scientist emeritus, one technician, a scientific illustrator, and a secretary. Additional personnel and guest scientists that are assigned occasionally on a temporary basis are listed along with the permanent staff at the end of this report.

A unit of the Northeast Fisheries Center, National Marine Fisheries Service, we are located in the Smithsonian Institution's National Museum of Natural History, Washington, D.C., where we can take advantage of one of the world's leading systems of collections, libraries, equipment, and facilities that are designed specifically for taxonomic and systematic research. The opportunity to meet and communicate with other taxonomic experts who reside in or visit the Smithsonian keeps the staff of the National Systematics Laboratory current on the latest ideas and techniques in the field. As Smithsonian Research Associates, scientists of the Systematics Laboratory expand Smithsonian scientific capabilities and help build and curate Smithsonian collections.

The Systematics Laboratory has two major responsibilities, research and service. Our research produces two principal products: 1) worldwide and regional taxonomic monographs, which are scholarly documents that identify, describe, and catalogue the diversity of species within selected taxa of marine organisms of commercial or ecological importance; and 2) various aids to

identification. These documents provide the necessary information for non-specialists to recognize and identify marine organisms.

The Systematics Laboratory serves many public as well as private institutions and individuals worldwide by providing expert identifications and information for a diversity of marine organisms including, but not limited to, the groups we study. We also review and comment upon manuscripts for scientific journals and for colleagues in the National Marine Fisheries Service, other agencies, and academia. Our staff evaluates research proposals for the National Science Foundation, Sea Grant, and similar research funding agencies.

In addition to these activities, staff members serve as officers of various scientific associations and participate in university affairs as research associates and adjunct professors.

## HISTORY

The origin of the National Systematics Laboratory can be traced back to 15 August 1942, when Samuel F. Hildebrand moved into the Division of Fishes of the National Museum of Natural History to continue his ichthyological research for the Department of the Interior's Bureau of Fisheries; this followed the merger of the Bureau of Fisheries fish collection with that of the U. S. National Museum. The Laboratory, then the National Center for Systematics, was transferred from the Department of the Interior to the National Oceanic and Atmospheric Administration in 1970 and renamed the National Systematics Laboratory. The Laboratory is administered by the Northeast Fisheries Center, National Marine Fisheries Service, but also is responsible to the National Marine Fisheries Service Research Council and four other regional Fisheries Centers.

Hemigrapsus sanguineus: mature female specimen of western Indo-Pacific crab collected in New Jersey.

## RESEARCH

Thirteen papers by NSL scientists were published in calendar year 1990 (listed at end of this report). Research completed in 1990 and earlier has led to 16 more papers that are now in press and eight additional manuscripts were completed. Major accomplishments in 1990 are listed below for each investigation.

### FISHES

Pelagic fishes of great importance to man live in the highly productive surface layers of the ocean where species tend to grow large and range widely. Emphasis is devoted to studying the anatomy and systematics of scombroids, the group that includes the tunas, Spanish mackerels, bonitos, and mackerels. Although many of the species have been known for a long time and an extensive literature treats them, detailed anatomical descriptions and comparisons are few, incorrect scientific names are often used, geographical ranges for many are not delimited precisely, and poorly documented classifications are current. The giant tunas, bonitos, and Spanish mackerels found around the world have been treated by Dr. Collette and colleagues in a series of monographs and papers.

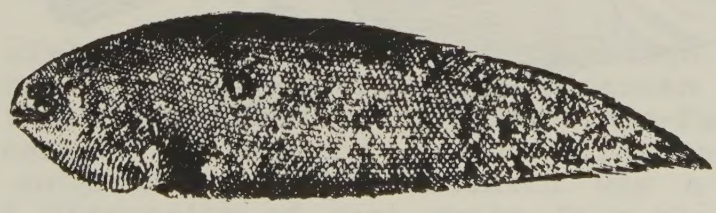
Studies of another group of ecologically and commercially important pelagic fishes, the clupeoids (anchovies, herrings, and sardines) have begun by Dr. Munroe with an investigation of the species of Spanish sardines (Sardinella) occurring in the Gulf of Mexico. Present research has focused on identification of useful diagnostic characters for recognition of the species occurring in the western Atlantic.

Several other groups of fishes are also under study. These include halfbeaks (Hemiramphidae) and needlefishes (Belonidae), abundant fishes, which are important forage species and are of local importance as food and bait. Monographs on these two families are being prepared by Dr. Collette for the series, "Fishes of the Western North Atlantic". Also under study are sand lances (Ammodytes) of the western North Atlantic by Ms. Nizinski and co-workers, and the tonguefishes (Symphurus) by Dr. Munroe and co-workers.

1. Revision of Fishes of the Gulf of Maine.- A revision of Henry B. Bigelow and William C. Schroeder's classic 1953 volume Fishes of the Gulf of Maine is underway by Drs. Bruce B. Collette and Grace Klein-MacPhee. Drafts of revised accounts for the skates and chimaeras by Dr. John McEachran (Texas A & M University), wreckfish, bigeyes, and jacks by Dr. MacPhee, sand lances by Ms. Niziniski, and labrids (tautog and cunner) by Dr. Munroe were produced in 1990. Accounts for about 45% of the 236 species have now been drafted.

2. Sand lance taxonomy.- An investigation of the taxonomy of sand lance (Ammodytes) in the northwest Atlantic demonstrates the presence of two species in this area. An inshore species, A. americanus DeKay, occurs in shallow coastal waters as well as in protected bays and estuaries from Delaware to Labrador. Ammodytes dubius Reinhardt is found from North Carolina to Labrador, mostly in offshore waters, but it sometimes occurs inshore with A. americanus. Ammodytes dubius has higher counts of lateral plicae, vertebrae, dorsal, anal, and pectoral rays and gill rakers. Numbers of lateral plicae (at 124 vs. 125) separate more than 98% of specimens examined. The manuscript distinguishing these two species was published in the Fishery Bulletin in 1990.

3. Tonguefish taxonomy.- Tonguefishes (Symphurus) are an abundant group of small to medium-sized flatfishes that comprise significant portions of the demersal fish fauna inhabiting sandy and muddy substrates of the coastal continental shelves off the southern United States, Mexico, and Central America. More than 45 species of tonguefishes are currently recognized in the eastern Pacific and western Atlantic, including several undescribed species. This genus is being revised by Dr. Munroe. In 1990, papers describing five new eastern Pacific species of tonguefishes (with Dr. M. Mahadeva, University of Wisconsin at Oshkosh and Ms. M. Nizinski, Systematics Laboratory) and two new species from mid-ocean islands in the Atlantic were published. A general revision of tonguefishes of the eastern Atlantic ocean and a manuscript correcting nomenclature for S. melanurus were also published. Two additional manuscripts, one describing a new species of Symphurus from the eastern Pacific ocean and another revising western Atlantic species of the Symphurus plagusia complex, including description of two new species from shallow-waters of the Caribbean Sea, were submitted and accepted for publication in 1990. Additional work on this group that was drafted into manuscript form during 1990 included a manuscript describing the patterns of interdigitation of dorsal-fin pterygiophores and neural spines occurring in 69 of 71 species presently recognized in the genus. This paper represents the first detailed discussion and evaluation of this character, based on examination of over 4200 specimens, as a diagnostic character in distinguishing the individual species of Symphurus.

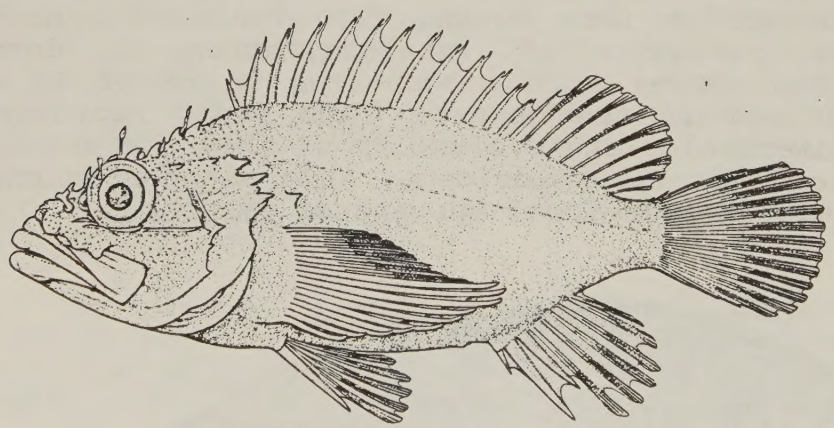


Symphurus melasmatotheca, a new eastern Pacific tonguefish

4. Fishes of Walters Shoals.- Walters Shoals, a shallow-water seamount 400 nautical miles south of Madagascar and 600 nm east of South Africa, is part of a chain of six island groups and seamounts that extend along the West Wind Drift from Tristan da Cunha in the South Atlantic to Amsterdam and St. Paul in the Indian Ocean. The shallow-water fishes of Walters Shoals were sampled with a number of techniques during cruise 17 of the Soviet oceanographic vessel Vityaz in 1988. The shallow-water fish fauna of Walters Shoals consists of about 20 species, including seven endemic to parts of the West Wind Drift chain, three of which are undescribed. A paper on the Walter Shoals fishes prepared with Dr. N. V. Parin (Institute of Oceanology, Moscow) was submitted and accepted for publication. The first of the undescribed species, a scorpionfish (Scorpaenodes immaculatus), was published with Dr. Stuart Poss (Gulf Coast Laboratory, Ocean Springs, MS). Other manuscripts are in preparation describing the moray eel and the midwater snapper with colleagues from other institutions.

5. A revision on viviparous halfbeaks of the genus Hemirhamphodon was begun with Mr. William D. Anderson, III, Smithsonian Vertebrate Zoology summer intern in 1988. The manuscript was completed, submitted, and accepted for publication. Five species are recognized, including two considered doubtful and one previously undescribed.

6. A revision of the two species of double-lined mackerels (Grammatocynus) was begun with Mr. Gary Gillis, Smithsonian Vertebrate Zoology summer intern in 1989. New figures were completed and additional references were added to the manuscript in 1990 so that the paper could be reviewed and submitted for publication in 1991.



Scorpaenodes immaculatus, a new species of scorpaenid from Walters Shoals

CRUSTACEANS

The groups of crustaceans most directly important to fisheries are the shrimps (mainly penaeoid species), lobsters, and crabs. Research on shrimps in the National Systematics Laboratory is conducted by Dr. Isabel C. Canet (Pérez Farfante), and that on crabs, lobsters, and other decapods by Dr. Austin B. Williams.

The shrimp fishery is the most valuable single segment of the U. S. fishing industry. In 1990, domestic commercial landings amounted to 346,494,000 lbs (heads-on-weight) with an ex-vessel value of $491,433,000, and an additional 501,348,000 lbs (heads-off), with a value of $1,658,691,000, were imported. To satisfy this great demand, more species have been added to the list of commercially valuable shrimps during the last few years, and new beds have been exploited both in nearby and distant regions, in both shallow and deep waters. Wise management efforts and meaningful ecological and physiological studies require thorough knowledge of the systematics of these crustaceans.

Crabs and lobsters are among the most conspicuous animals in catches from heavily fished marine waters of the world. In combination, they yield about half of the tonnage of domestic crustacean fishery production and nearly half of its dollar value. In their adult phase they are prominent members of bottom communities, ranging from marshlands and estuaries through nearshore systems to the deep sea, and they occupy dominant positions in the biological communities where they live. A huge literature exists for some species that are seemingly well known, but because of faulty oversimplified descriptions and distribution ranges, community relationships of many such species may be poorly understood. Still other species have been uncritically identified, and many have never been recognized and described.

1. History of crab research in North America.- A symposium on History of Carcinology sponsored by the Crustacean Society was presented during the annual meeting of the American Society of Zoologists. Dr. Williams presented an invited talk, "Reflections on crab research in North America since 1758," that will be published in a symposium volume.

2. Rare crabs from the Marianas Archipelago.-Participation of Dr. Williams in an International Crustacean Conference in Australia provided an opportunity to study Indo-Pacific crabs in crustacean research collections of Hawaiian and Australian museums. An outgrowth of that research was a collaborative description and discussion of rare crabs from the Marianas with R. B. Moffitt, NMFS, SWFC, Honolulu. A paper is in press.

3. Burrowing shrimps from the Gulf of Mexico and Caribbean.- A small burrowing shrimp taken in box core samples from the Florida Shelf Mississippi-Alabama-Florida (MAFLA) Outer Continental Shelf Studies (OCS) was described by Dr. Williams in collaboration with R. W. Heard, Gulf Coast Research Laboratory. In cooperation with N. Ngoc-Ho, Paris Museum, a new genus was erected for a group of shrimps that burrow in stony corals of the Caribbean Sea and tropical eastern Pacific. Both of these studies will be incorporated in a monograph of this group that is in preparation by Dr. Williams.

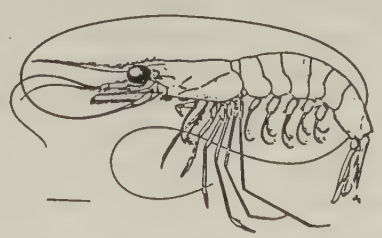
4. New xanthid crab from Argentina.- A new species of xanthid crab living in the intertidal zone was described from the region of Mar del Plata by Drs. Williams and E. E. Boschi, Instituto Pesquero, Argentina. The species was compared to a similar one recently described from the Pacific side of the Panama Canal.

5. Fossil shrimp and crab.- A new species of axiid shrimp from an exposure of the Middle Eocene of South Carolina was described by Drs. Williams and B. Kensley, National Museum of Natural History. Fossil axiids are rare, but this unique specimen, preserved as quartz free of enveloping matrix is almost complete except for a few missing appendages. Also, a new species of calappid crab from the Late Cretaceous of the Western Interior of the United States is being described in collaboration with Dr. G. A. Bishop, Georgia Southern University. A paper is in press.

Panopeus margentus, a new intertidal xanthid crab from Argentina

6. Lobster exhibit at Natural History Museum.- An exhibit, "Lobster Tales....diversity and world fishery" that opened in the National Museum of Natural History, Washington, D. C. in September, 1989 centers around color photographs of spiny lobster tails taken from the prize-winning paper "Lobsters-Identification, World Distribution, and U. S. Trade" by A. B. Williams, Mar. Fish. Rev. 48(2):1-36, 1986. The exhibit has been moved to the aquarium in Woods Hole, MA. Included are a mural showing migrating Caribbean spiny lobsters, illustrated differences between clawed, spiny, and flat lobsters, claws of an American lobster, a model of a Norway lobster, diverse preserved lobsters on a rotating platform, mapped lobster fisheries of the world, fossil spiny lobsters, copies of the original MFR publication and its sequel "Lobsters of the world in U. S. trade" published by Osprey Books.

7. Hydrothermal-vent crustaceans.- Hydrothermal vents, as well as cold brine and hydrocarbon seeps in the world oceans, have become major foci of oceanographic discovery and research in the past 15 years. With the aid of increasingly sophisticated exploratory techniques and equipment operated by NOAA and other agencies, these features have come to be recognized as widely associated with tectonically active zones of the ocean floor. The vents and seeps have been in existence since very early in the earth's history, and through geological and biological processes have had profound influence on the oceans. Through time, representatives of many organismic groups have adapted to unique systems of nutrition in these environments at depths beyond the reach of light, and among the groups represented are decapod crustaceans. From the first discovery of these features, Dr. Williams has been describing decapods collected from them in a series of papers.



Tanypenaeus caribeus, a penaeoid shrimp

8. Catalog of genera of peneaoid shrimps.- During 1990, Dr. Canet prepared synopses of 28 genera for inclusion into a catalogue of genera of penaoid shrimps. For each of about 50 generic-groups to be covered in the catalogue, the following information is included: original reference, synonyms, type-species, gender, list of nominal species, and distribution. Additionally, phylogenetic relationships based on cladistic studies will be established for groups of genera and various higher taxonomic categories. Material of representative genera was selected and illustrations prepared during 1990. A key to the genera and bibliography is also in preparation.

SQUIDS

Squid fisheries, both in U.S. waters and worldwide, concentrate on species from two families, Loliginidae and Ommastrephidae. In the United States, these fisheries currently are primarily an export industry, although utilization in the United States is increasing.

Loliginids include many species of demersal squids which attain medium to large sizes and which are both common and abundant on continental shelves. The loliginids in U. S. waters include species that are harvested commercially (37 million lbs from the east coast U. S. fishery in 1989), but which are quite difficult to identify. Additionally, there are several other species of small loliginids found in U. S. waters. Generic relationships of the species are presently very confused. Four conflicting classification schemes have been proposed, based on single characters, on regional material, or on arguments that have been institutionalized in outdated literature. Because the diverse family Loliginidae is cosmopolitan, the only way to resolve relationships within it adequately is by a worldwide systematic review of the taxonomic characters. Dr. Michael Vecchione, together with several colleagues, is reviewing the loliginids.

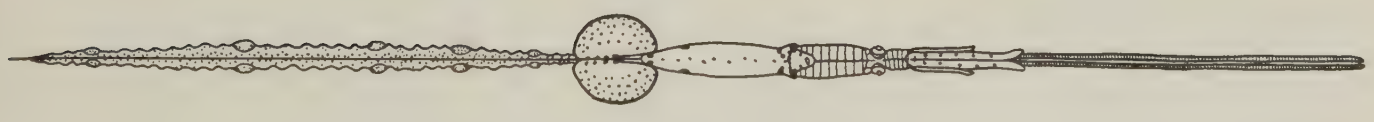
Commercially and ecologically, the most important ommastrephids in U. S. waters belong to the genus Illex. The catch of Illex in U. S. waters in 1989 (10 million lbs) was limited because of market domination by large catches of Illex from the Falkland Islands. There are four groups of Illex in the western Atlantic which are more or less distinct morphologically. It has been proposed that these morphotypes are separate species, although some authors still consider them to be subspecies. These arguments, based primarily upon preserved specimens, have not fully considered other components of morphological variability (e.g., geographic, seasonal, sexual, ontogenetic). Dr. Vecchione is conducting a study of Illex which will treat several components of variability from fresh as well as preserved material.

1. Volume on Cephalopod Systematics and Biogeography.- Together with Prof. Nancy Voss, University of Miami, and Dr. Ronald Toll, University of the South, Dr. Vecchione is editing a volume on Cephalopod Systematics and Biogeography. The multi-authored volume, which will be issued as a Smithsonian Contribution to Zoology, results from a two-week international workshop conducted at George Washington University and sponsored by the Smithsonian Institution.

2. The Gilbert L. Voss Memorial Issue.- This memorial issue of the Bulletin of Marine Science, to be published in honor and recognition of Prof. Gilbert L. Voss (1918-1989), is edited by

Dr. Vecchione together with Dr. Clyde F. E. Roper of the Smithsonian Institution. The volume is comprised of papers from two sources: (1) former students and colleagues presenting a variety of marine biological topics, and (2) a symposium on cephalopods convened in honor of Gil Voss. The eight non-cephalopod papers contributed by Gil's colleagues and former students cover an array of marine biological subjects, including the systematics of cnidarians, crustaceans, and mollusks as well as the ecology of planktonic mollusks and phytoplankton. The Gilbert L. Voss International Symposium on the Systematics, Biology, and Fisheries of Recent Cephalopods was conducted at the Marine Biological Laboratory in Woods Hole, Massachusetts, on 5-7 June 1990 under the sponsorship of the American Malacological Union (at its annual meeting) and in conjunction with the Cephalopod International Advisory Council, which Gil helped to found. The symposium attracted over 50 invited and contributed papers from scientists of 17 countries. In addition, 15 posters were presented and 19 abstracts were received from contributors unable to attend the symposium. A number of movie and videotape presentations concerning cephalopod research also were shown. Over 100 participants attended the symposium. Included in the present issue are 43 papers from the symposium, as well as 43 symposium abstracts.

3. Cephalopods observed from submersibles in the western North Atlantic.- Records of 158 observations of cephalopods from submersibles, primarily the JOHNSON SEA-LINK, have been compiled through collaboration with several investigators. These observations include 118 video sequences, 58 collected specimens, and numerous shipboard photographs of live animals. At least 33 species have been observed to date; a few species have been observed repeatedly and could be good subjects for directed studies. The methods developed for in-situ observations and subsequent collection of specimens with little or no damage allow descriptions of behavior, morphology, physiology, and distribution that are not possible with other methods of collecting.



Doratopsis squid paralarva

## FIELD WORK

Dr. Austin Williams and Dr. Gale A. Bishop (Georgia Southern College) collected fossil decapod crustaceans from late Cretaceous deposits in northwestern South Dakota during July and August.

Field work on cephalopod projects continued during this year. In August, Dr. Vecchione travelled to the Smithsonian Marine Station in Florida to continue the field work for a project designed to collect fresh specimens of paralarval cephalopods from the Straits of Florida.

In August and September, Dr. Munroe and Ms. Nizinski participated in a Smithsonian sponsored collecting expedition to inventory the fish fauna occurring in nearshore and fresh waters of Tobago. Fish samples were collected primarily by SCUBA using rotenone. Several new species were taken by the expedition. Information from this effort will be incorporated into a general atlas cataloguing the fauna of Tobago.

## SERVICE

In addition to their research responsibilities, scientists from the Systematics Laboratory serve the scientific community and the public in other ways. The primary service functions of this Laboratory are to provide expert identifications for groups of fishes, crustaceans, squids, and corals in which we specialize, and to furnish information on these animals. We assist visitors in the use of the national collections. We review manuscripts for scientific publications, for colleagues in NMFS, and other agencies. Finally, we assist staffs of the divisions of Fishes, Crustacea, and Mollusks of the National Museum of Natural History with curation and loans, especially material collected by NMFS.

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| NOAA, Office of Legislative Affairs | P. Allen |
| NOAA, International Liason | A. Paterson |
| NOAA, Underwater Research Program | D. Stein |
| North Carolina Central University, Durham | J. Clamp |
| North Carolina State University, Raleigh | J. Ross |
| Ocean Garden Product, CA | D. Blake |
| Oceanographic Institute, Honolulu | G. Powder |
| Ohio State University | C. Cole |
| Old Dominion University | C. Lascara |

| INFORMATION ORGANIZATION | CONTACT |
|---|---|
| Private Individual | R. Baxter, F. Berry, H. Berynatonis, M. Bouch, S. Drake, L. Foreman, C. Hodsdon, D. Maher, H. McElvoy, R. Millican, D. Rubrin, C. Schwarz, D. Shannon, M. Silva, S. Smith, E. Williams |
| Rancho Santa Ana Botanic Gardens, CA | L. Lenz |
| Royal Ontario Museum, Canada | R. Winterbottom |
| Rutgers University | K. Able, J. Kraueter, S. Sogard |
| Smithsonian Institution | F. Ferrari, R. Lemaitre, P. Nutter, R. Manning, F. Talbot |
| South Carolina Marine Resources Center | E. Wenner |
| Espey Houston and Associates | R. Ilg |
| Strategic Information Services | T. Langley |
| Sweden | L. Johnson |
| TDC Magazine, Washington, DC | R. Farwell |
| Texas A & M University | R. Darnell |
| Thomas Nelson Community College, VA | R. Hyle, II |
| Tokyo University of Fisheries | K. Tsuchiya |
| U. S. Customs, NY | T. Brady |
| U. S. Geological Survey, Harvard | R. Ross |
| U. S. Fish Wildlife Service | D. McDaniel |
| U. S. Forest Service | L. Forbis |
| Universidade de Oriente, Venezuela | F. Arocha |
| Universidad Autonoma Mexico | A. Salcedo |
| Universidad del Valle, Colombia | G. Damos |
| Universidad do Sao Paulo, Brazil | S. Rodriguez |
| University of Alabama | R. Mayden |
| University of California | G. Vermeij |
| University of Central Florida | D. Snodgrass |
| University of Chicago | B. Bloch |
| University of Costa Rica | W. Szelistowski |
| University of Georgia, Savannah River Lab. | C. Lydeald-Bruce |
| University of Hamburg | H. Bluhm |
| University of Hawaii | D. Greenfield |
| University of Kiel, Germany | U. Piatkowski |
| University of Maine | R. Wahle |
| University of Maine, Darling Marine Center | R. Stenek |
| University of Maryland | J. Tschirky, W. Spencer |
| University of Maryland and NMFS, Oxford | A. Rosenfield |
| University of Mississippi | G. Gaston |
| University of Puerto Rico, Mayaguez | B. Williams, L. Williams |
| University of Southwestern Louisiana | D. Felder, R. Bauer |
| University of Sri Jayewardenpura, Sri Lanka | J. Jinadasa |

INFORMATION

| ORGANIZATION | CONTACT |
|---|---|
| University of Texas, Austin | C. Mojica |
| University of Thailand | B. Pechsathid |
| University of Wisconsin, Oshkosh | M. Mahadeva |
| Virginia Institute of Marine Science | L. Daniel, H. Banford, R. McCormick, J. Musick |
| Virginia Marine Resources Commssion | M. Meier |
| VNIRO, Moscow | V. Borisov |
| WETA, Washington, DC | P. Kopper |
| Woods Hole Oceanographic Institution | E. Karmofsky |
| World Book Encyclopedia, Chicago | L. Shields, F. Wu |
| Zoological Museum, Copenhagen University | J. Nielsen |
| Zoological Institute, Acad. Sci., Leningrad | S. Mandrytza |
| Zoologische Staatssammlung, Munich | M. Kottelat |

MANUSCRIPTS REVIEWED

Reviews of 41 manuscripts were provided for:

American Fisheries Society
American Malacological Union
Australian Journal of Scientific Research
The Beagle, Records of the Northern Territory Museum of Arts and Sciences
Bulletin of Marine Science
California Academy of Sciences
California Fish and Game
Canadian Journal of Zoology
Copeia
CFWIS List of common and scientific names of marine organisms
Gulf Research Reports
Journal of Cephalopod Biology
Journal of Crustacean Biology
Nautilus
Pakistan Journal of Scientific and Industrial Research
Proceedings of the Biological Society of Washington
Smithsonian Contributions to Zoology
Smithsonian Translation Series
Systematic Zoology

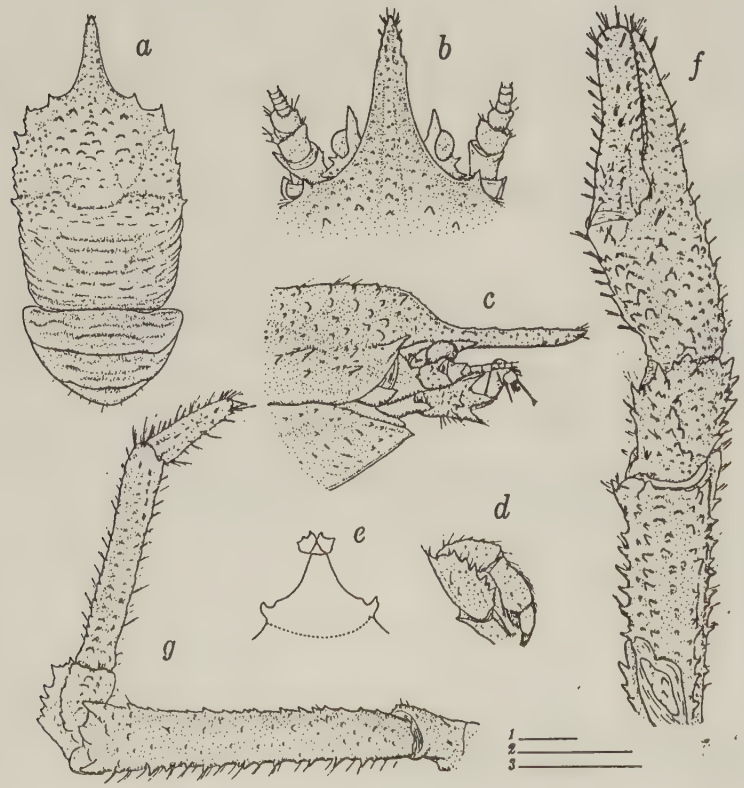
51 manuscripts and one Master's Thesis were also reviewed for authors at their request.

RESEARCH PROPOSALS REVIEWED

25 proposals were reviewed for the following organizations:

Council for International Exchange of Scholars, Washington, DC. (Fullbright)
Louisiana Board of Regents
National Geographic Society
National Science Foundation
Sea Grant- University of Hawaii
Smithsonian Institution Postdoctoral Fellowship Program
Smithsonian Institution Predoctoral Fellowship Program
Smithsonian Institution Scholarly Studies Program
Smithsonian Institution, Smithsonian Marine Station, Link Port
Smithsonian Institution Vertebrate Zoology Summer Intern Program
Smithsonian Institution Visiting Fellow Program
Texas A & M Sea Grant College, College Station
University of Southwestern Louisiana
Virginia Institute of Marine Science

Three proposals were also reviewed for authors at their request.




Munidopsis marianica, a new species of squat lobster collected from the Mariana Back Arc Basin, Pacific Ocean

## PROFESSIONAL ACTIVITIES

### AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES

Dr. Vecchione represented NOAA as an invited panel member in a Presidential Symposium entitled "Systematics, Society, and Public Policy" during a joint meeting with the Association of Systematic Collections in Richmond, VA, August 1990.

### AMERICAN FISHERIES SOCIETY

Dr. Williams served as a member of the American Fisheries Society Committee on Names of Aquatic Invertebrates.

### AMERICAN LITTORAL SOCIETY

Dr. Collette continued to serve on the scientific advisory council.

### AMERICAN MALACOLOGICAL UNION

Dr. Vecchione was a co-convenor and session chairman for the International Symposium on Systematics, Fisheries, and Biology of Cephalopods in honor of G. L. Voss held during the annual meeting of AMU in Woods Hole, MA, June 1990. He also presented four papers at the meeting.

### AMERICAN SOCIETY OF ICHTHYOLOGISTS AND HERPETOLOGISTS

Drs. Collette and Munroe attended the annual meeting held in Charleston, SC. Dr. Munroe chaired a session at the meetings. Dr. Collette chaired a meeting of the Ichthyological Collections Committee, chaired a session at the meetings, and participated in the Board of Governors and Business meetings. Dr. Collette also presented a paper revising the species of Hemirhamphodon.

### AMERICAN SOCIETY OF ZOOLOGISTS

Dr. Williams participated in the annual meetings of the American Society of Zoologists and the Crustacean Society in San Antonio, Texas, in December. Dr. Williams presented a paper on the history of crab research in North America in a symposium of the Crustacean Society.

ATLANTIC ESTUARINE RESEARCH SOCIETY

Dr. Vecchione presented a paper on "Dissolved oxygen and the distribution of the euryhaline squid Lolliguncula brevis" at the annual meeting in Gloucester Point, VA, May 1990.

BIOLOGICAL SOCIETY OF WASHINGTON

Dr. Williams served as a member of the Council and continued as Custodian of Publications.

Dr. Collette participated in meetings as a member of the Council.

Dr. Vecchione participated in annual and executive council meetings and served as Treasurer of the Society.

CEPHALOPOD INTERNATIONAL ADVISORY COUNCIL

Dr. Vecchione continued to serve as an elected member of the council.

CYBIUM

Dr. Collette continued as a member of the Editorial Board.

FISHERY BULLETIN

Dr. Collette served as a member of the Best Publications Award Committee.

FISHES OF THE WESTERN NORTH ATLANTIC

Dr. Collette continued to serve as Chairman of the Editorial Board.

INTERNATIONAL CRUSTACEAN CONFERENCE

Dr. Williams presented a paper on western Atlantic Upogebia and chaired a Plenary Session on Phylogeny and Systematics at the meeting in Brisbane, Australia.

IV INTERNATIONAL CONFERENCE OF SYSTEMATIC AND EVOLUTIONARY BIOLOGY

Dr. Williams and Dr. Joel W. Martin, Natural History Museum of Los Angeles County, CA, presented a paper on "Decapod crustaceans from hydrothermal vent/cold seep sites in the Pacific and Atlantic" in a Symposium on systematics, biogeography, and evolutionary significance of hydrothermal vents and vent-related seeps: The emerging global pattern, which was held at the University of Maryland in College Park.

JOURNAL OF CRUSTACEAN BIOLOGY

Dr. Williams served as an Associate Editor.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION ANTARCTIC PROGRAM

Drs. Munroe, Vecchione, and Williams participated in a two day intensive training session for NOAA-Corps Officer, Ensign Victor Ross, on identification of commercially important and regulated species of Antarctic crabs, fishes, and squids. Ensign Ross received this training in anticipation of participation as an observer aboard foreign fisheries vessels working in Antarctic waters.

SMITHSONIAN INSTITUTION

Drs. Collette and Munroe served as Research Associates in the Department of Vertebrate Zoology, Drs. Canet, Williams, and Vecchione in the Department of Invertebrate Zoology.

Dr. Collette served as advisor for a Smithsonian Vertebrate Zoology summer intern studying halfbeaks of the genus Dermogenys.

Dr. Munroe served as a member of the Selection Committee for Summer Interns for the Vertebrate Zoology Department. He also presented an informal seminar to this group on career opportunities in systematics.

Dr. Williams served as a member of an advisory panel for the Smithsonian Oceanographic Sorting Center-National Science Foundation Division of Polar Programs cooperative systematic studies and analyses of Polar Biological Materials.

SMITHSONIAN INSTITUTION (Continued)

Ms. Moore presented a three-hour lecture and demonstration on Sumi-e (Japanese brush painting) and the making of Japanese woodblock prints as part of the The Celebration of Asian Pacific Heritage Month at the National Museum of American Art.

Ms. Moore taught eight-week courses in Sumi-e and Shodo (Japanese calligraphy) at the Smithsonian's Resident Associate Programs.

## OTHER MEETINGS ATTENDED

AMERICAN ASSOCIATION OF ZOOLOGICAL NOMENCLATURE
AMERICAN FISHERIES SOCIETY, POTOMAC CHAPTER
AMERICAN INSTITUTE OF BIOLOGICAL SCIENTISTS
AMERICAN SOCIETY OF ZOOLOGISTS
ASSOCIATION OF SYSTEMATICS COLLECTIONS
ATLANTIC ESTUARINE RESEARCH SOCIETY
INTERNATIONAL CONFERENCE ON SYSTEMATICS AND ECOLOGY
NOAA- INTERNATIONAL AND INTERGOVERNMENTAL LIAISON STAFF WORKSHOP
SOCIETY OF SYSTEMATIC ZOOLOGISTS

## UNIVERSITY AFFAIRS AND TEACHING

BERMUDA BIOLOGICAL STATION

Dr. Collette taught a four-week course, "Biology of Fishes", to a class of eight students from five countries at the Bermuda Biological Station in August.

GEORGE WASHINGTON UNIVERSITY

Ms. Moore was interviewed by a Japanese graduate student from George Washington University in her term paper "Working at a Museum," which was part of the study toward's her Master's Degree in Museum Art Education.

VIRGINIA INSTITUTE OF MARINE SCIENCE/ COLLEGE OF WILLIAM AND MARY

Dr. Collette conferred with Ms. Heidi Banford on her thesis project on halfbeak systematics.

VIRGINIA INSTITUTE OF MARINE SCIENCE/ COLLEGE OF WILLIAM AND MARY (Continued)

Dr. Vecchione served as a member of the Associate Faculty. He presented a Distinguished Alumnus seminar entitled "Submersibles, Cephalopods, and Systematics" at the 50th Anniversary Celebration of the Virginia Institute of Marine Science.

Dr. Munroe served as a member of the Adjunct Faculty and served on the Ph. D. dissertation committee of Mr. Jaoa Vieira on latitudinal gradients in estuarine fish communities in the western Atlantic.

WASHINGTON, D.C. AND MARYLAND INTERMEDIATE SCHOOLS

Ms. Moore presented an informal talk and demonstrated scientific illustration techniques to 25 eighth and ninth grade students from Washington, D. C. and nearby Maryland schools who were participants in the "1000 Civil Rights Group" of the I Have A Dream Foundation's program for disadvantaged young people. This experience was to provide students with an introduction to careers in science and to enhance basic skills and self esteem.

WASHINGTON, D.C. GOVERNMENT

Ms. Moore participated in the Asian Pacific American Art Exhibit, which was organized by the Washington, DC, Mayor's Office at the Summer Museum.

COLLETTE, B. B. Problems with grey literature in fishery science. pp. 27-31. In: Writing for Fishery Journals. J. Hunter, Ed.; Special Symposium of the American Fisheries Society.

Kensley, B. and A. B. WILLIAMS. Axiopsis eximia, a new thalassinidean shrimp (Crustacea, Decapoda, Axiidae) from the Middle Eocene of South Carolina. J. Paleontol. 64(5):798-802.

Mahadeva, M. N. and T. A. MUNROE. Three new species of symphurine tonguefishes from tropical and warm temperate waters of the eastern Pacific (Symphurus: Cynoglossidae: Pleuronectiformes). Proc. Biol. Soc. Washington 103(4):931-954.

MUNROE, T. A. Symphurus melanurus Clark, a senior synonym for the eastern Pacific tonguefishes, S. seychellensis Chabanaud 1955 and S. sechurae Hildebrand 1946. Copeia 1990(1):229-232.

MUNROE, T. A. Eastern Atlantic tonguefishes (Symphurus: Cynoglossidae, Pleuronectiformes), with descriptions of two new species. Bull. Mar. Sci. 47(2):464-515.

MUNROE, T. A. and M. S. NIZINSKI. Symphurus melasmatotheca and S. undecimplerus (Cynoglossidae, Pleuronectiformes), two new eastern Pacific tonguefishes with eleven caudal-fin rays. Copeia 1990(4):985-996.

NIZINSKI, M. S., B. B. COLLETTE, and B. B. WASHINGTON. Separation of two species of sand lance (Ammodytes americanus and A. dubius) in the western North Atlantic. Fish. Bull., U.S. 88(2):241-255.

Poss, S. and B. B. COLLETTE. Scorpaenodes immaculatus, a new species of scorpionfish (Osteichthyes: Scorpaenidae) from Walters Shoals, Madagascar Ridge. Proc. Biol. Soc. Washington 103(3):543-549.

VECCHIONE, M. and V. A. Hand. Digestive-gland histology in paralarval squids (Cephalopoda: Loliginidae). Fish. Bull., U.S. 87(4):995-1000.

WILLIAMS, A. B. and K. Baba. New squat lobsters (Galatheidae) from the Pacific Ocean: Mariana Back Arc Basin, East Pacific Rise, and Cascadia Basin. Fish. Bull., U.S. 87(4):899-910.

WILLIAMS, A. B. and E. B. Boschi. Panopeus margentus, a new crab from the Argentine warm temperate subregion (Decapoda: Xanthidae). Proc. Biol. Soc. Washington 103(3):598-601.

WILLIAMS, A. B. and J. J. McDermott. An eastern United States record for the western Indo-Pacific crab, Hemigrapsus sanguineus (Crustacea: Decapoda: Grapsidae). Proc. Biol. Soc. Washington 103(1):108-109.

WILLIAMS, A. B. and N. Ngoc-Ho. Pomatogebia, a new genus of thalassinidean shrimps from western hemisphere tropics (Crustacea: Upogebiidae). Proc. Biol. Soc. Washington 103(1):614-616.

PAPERS IN PRESS

Anderson, W. D., III and B. B. COLLETTE. Revision of the viviparous halfbeaks of the genus Hemirhamphodon (Teleostei: Hemiramphidae). Ichthyol. Explor. Freshwaters.

Bishop, G. A. and A. B. WILLIAMS. Necrocarcinus olsonorum, new species, a crab (Decapoda: Calappidae) from the Cretaceous Carlile Shale (Turonian), Western Interior United States. J. Crust. Biol.

COHEN, D. M. Families Argentinidae, Bathylagidae, Melanonidae, Moridae, Gadidae, and Bregmacerotidae. In: Check-list of Fishes of the eastern Tropical Atlantic. J. C. Quero, ed., UNESCO.

COLLETTE, B. B. Family Scombridae. In: Check-list of Fishes of the eastern Atlantic Tropical Atlantic. J. C. Quero, ed., UNESCO.

COLLETTE, B. B. and N. V. Parin. Families Belonidae and Hemiramphidae. In: Check-list of Fishes of the eastern Atlantic Tropical Atlantic. J. C. Quero, ed., UNESCO.

COLLETTE, B. B. and N. V. Parin. Shallow-water fishes of Walters Shoals, Madagascar Ridge. Bull. Mar. Sci.

Hanlon, R. T., S. v. Boletzky, T. Okutani, G. Pérez-Gandaras, P. Sanchez, C. Sousa-Reis, and M. VECCHIONE. Suborder Myopsida Orbigny, 1845. In: "Larval" and Juvenile Cephalopods. A Manual for Their Identification. M. J. Sweeney et al., eds. Smithson. Contrib. Zool.

## PAPERS IN PRESS (Continued)

MUNROE, T. A. Western Atlantic tonguefishes of the Symphurus plagusia species complex (Cynoglossidae: Pleuronectiformes), with descriptions of two new species. Fish. Bull., U.S.

MUNROE, T. A., M. S. NIZINSKI, and M. N. Mahadeva. A new species of shallow-water tonguefish (Pleuronectiformes: Cynoglossidae) from the eastern Pacific. Proc. Biol. Soc. Washington.

Roper, C. F. E. and M. VECCHIONE. The Gilbert L. Voss Memorial Issue. Forward. Bull. Mar. Sci.

Van Dover, C. and A. B. WILLIAMS. Egg size in squat lobsters (Galatheoidea): constraint and freedom. Crustacean Issues, Balkema, Rotterdam.

VECCHIONE, M. Long-term trends in the abundance of the copepod Acartia tonsa in the Calcasieu Estuary. Contr. Mar. Sci.

VECCHIONE, M. Paralarval ecology of a euryhaline squid, Lolliguncula brevis (Cephalopoda: Loliginidae). Fish. Bull., U.S.

VECCHIONE, M. A method for examining the structure and contents of the digestive tract in paralarval squids. Bull. Mar. Sci.

VECCHIONE, M. and C. F. E. Roper. Cephalopods observed from submersibles in the western North Atlantic. Bull. Mar. Sci.

Young, R. E., K. M. Manold, and M. VECCHIONE. The enoploteuthid group of families. In: "Larval" and Juvenile Cephalopods. A Manual for Their Identification. M. J. Sweeney et al., eds. Smithson. Contrib. Zool.

## COMPLETED MANUSCRIPTS

Hostetter, E. B. and T. A. MUNROE. Age, growth, and reproduction of tautog, Tautoga onitis (Linnaeus), (Labridae, Perciformes) from coastal waters of Virginia. For Fish. Bull., U. S.

MUNROE, T. A. Interdigitation pattern of dorsal-fin pterygiophores and neural spines, an important diagnostic character for symphurine tonguefishes (Symphurus: Cynoglossidae: Pleuronectiformes). For Bull. Mar. Sci.

COMPLETED MANUSCRIPTS
(continued)

RAJAGURU, A. Biology of two co-occurring tonguefishes, Cynoglossus arel and C. lida (Pleuronectiformes: Cynoglossidae) from Indian waters. For: Fish. Bull., U.S.

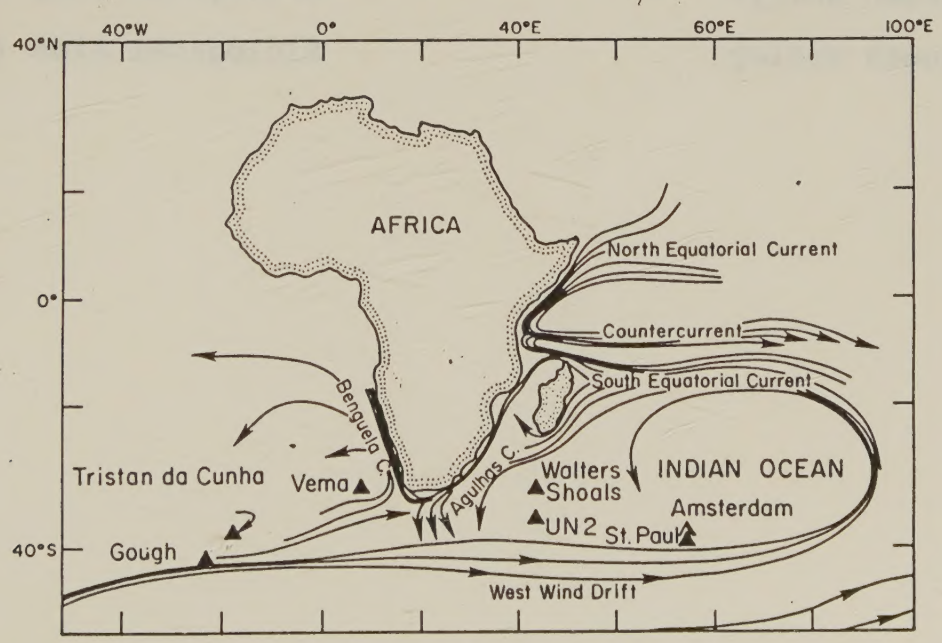
RAJAGURU, A. and G. Shantha. The sessile barnacle, Xenobalanus globicipitis (Coronulidae) from the bottlenose dolphin, Tursiops truncatus (Delphinidae), with a summary of previous records from cetaceans. For: Fish. Bull., U.S.

VECCHIONE, M., T. F. Brakoniecki, Y. Natsukari, and R. T. Hanlon. Family Loliginidae. In: Systematics and Biogeography of Cephalopods. N. A. Voss, M. Vecchione and R. Toll (eds.). For: Smithsonian Contrib. Zool.

VECCHIONE, M. Zooplankton of Calcasieu Estuary. For: Estuaries.

VECCHIONE, M. and K. L. Mayne. Larval distribution in an artificial estuary. For: NOAA Tech. Rept.

VECCHIONE, M., C. F. E. Roper, C. C. Lu, and M. J. Sweeney. Development, distribution, and relative abundance of paralarval cephalods in the western North Atlantic. For: Smithsonian Contr. Zool.




Ocean current patterns in the vicinity of the West Wind Drift Islands and seamounts.

## STAFF

| | |
|---|---|
| Bruce B. Collette | Laboratory Director and Ichthyologist |
| Isabel C. Canet (Pérez Farfante) | Carcinologist Emeritus |
| Thomas A. Munroe | Ichthyologist |
| Michael Vecchione | Squid Biologist |
| Austin B. Williams | Carcinologist |
| Grace Klein-MacPhee | Fishery Biologist |
| Martha Nizinski | Zoologist |
| Ruth E. Gibbons | Museum Specialist (until Sept. 1990) |
| Keiko H. Moore | Scientific Illustrator |
| Virginia R. Thomas | Secretary |
| A. Rajaguru | Visiting Investigator |
| Maureen Aninye | Biological Aide (Summer) |
| Shaunta Holley | Biological Aide (Summer) |